



Sub Regional RTEP Committee PJM South

July 27, 2018

First Review

Baseline Reliability and Supplemental Projects

Problem Statement:

- A new block load is being added at Ridge Road substation in Mecklenburg County, VA. The minimum demand for this load addition is 38 MW in 2022.

Potential Solution:

- Add a three breaker row to the existing 115kV breaker and a half scheme
- Add a high side circuit switcher for the fifth distribution transformer

Alternatives: No feasible alternatives

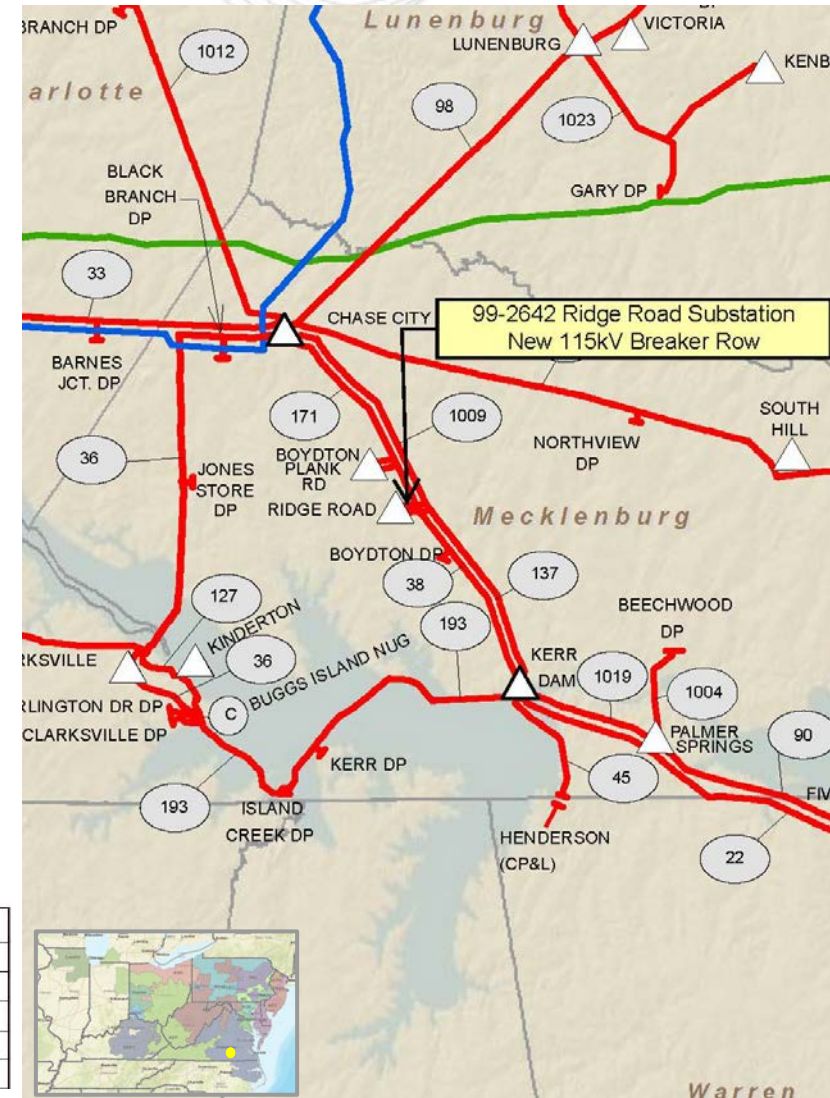
Estimated Project Cost: \$2.7 M

Normal Service cost: \$0.5 M

Excess Facilities cost: \$2.2 M

Possible In-service Date: 8/1/2019

Project Status: Conceptual



COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED

Problem Statement:

- Elmont 230-115kV 168 MVA transformer #5 needs to be replaced as a result of Dominion's ongoing transformer health assessment (THA) process. This process considers design characteristics, past electrical test results, dissolved gas-in-oil test results, age, ongoing maintenance issues, and past failures of similar designed transformers.
- This transformer was manufactured in 1971 and was remanufactured in 2003 following failure in November 2001.
- Drivers for replacement are:
 - Reduced BIL Ratings
 - Previously remanufactured following failure
 - Transformers of this manufacture are considered suspect due to previous transformer failures

Potential Solution:

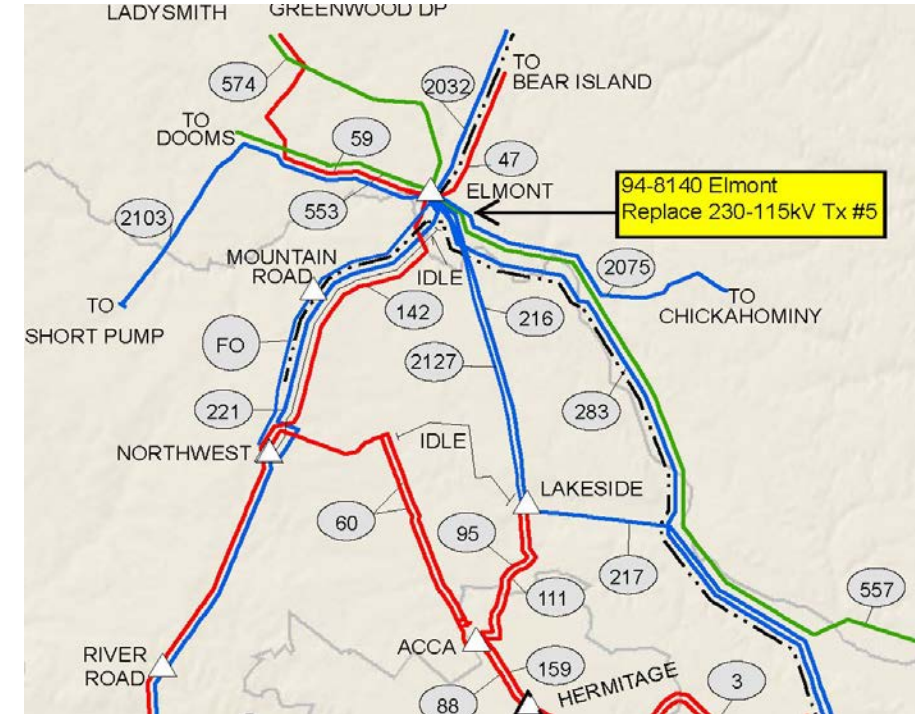
- Replace Elmont transformer #5 with a 168 MVA transformer

Alternatives: No feasible alternatives

Estimated Project Cost: \$1.5 M

Possible In-service Date: 9/12/2019

Project Status: Engineering



COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED



Problem Statement:

- 115kV Line #120 runs 11 miles from Chesapeake Energy Center to Greenwich substation. This line serves approximately 21,000 customers with about 100MWs through Dozier substation and Thompsons Corner substation. Currently line #120 is normally open at Greenwich. To serve these customers with better reliability the line needs to be networked.

Potential Solution:

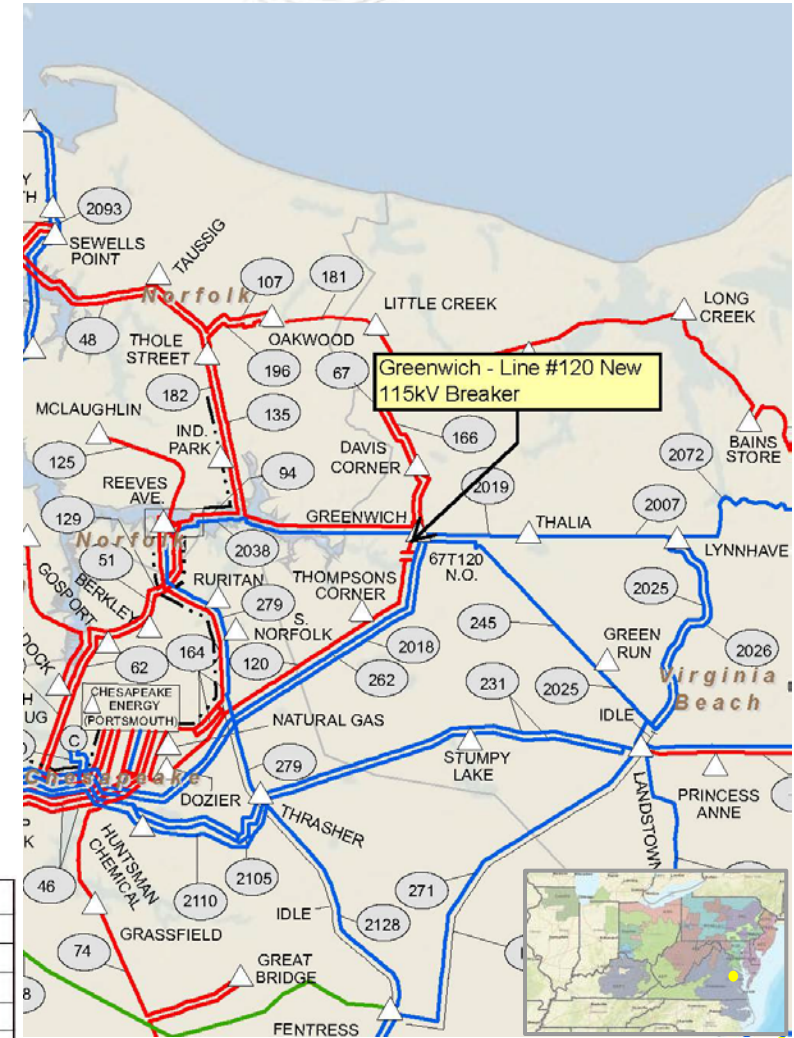
- Install a new 115kV breaker in line #120 at Greenwich and perform associated transmission work. Close the normally open point 67T120. Update relay equipment for the new network line #120.

Alternatives: No feasible alternatives

Estimated Project Cost: \$1.5 M

Possible In-service Date: 05/31/2020

Project Status: Conceptual



COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED

Second Review

Baseline Reliability and Supplemental Projects

115kV Line #49 New Road – Middleburg Rebuild

Previously Presented: 05/30/2018 SRTEP

Problem Statement:

Driver: Dominion “End of Life Criteria”

- The 115kV Line #49 from New Road to Middleburg is roughly 5.8 miles long and was constructed on wood H-frame structures in 1953. Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors is 40-60 years, and porcelain insulators is 50 years. This line needs to be rebuilt to current standards based on Dominion’s “End of Life” criteria.
- Line #49 is radial and serves approximately 9033 customers.

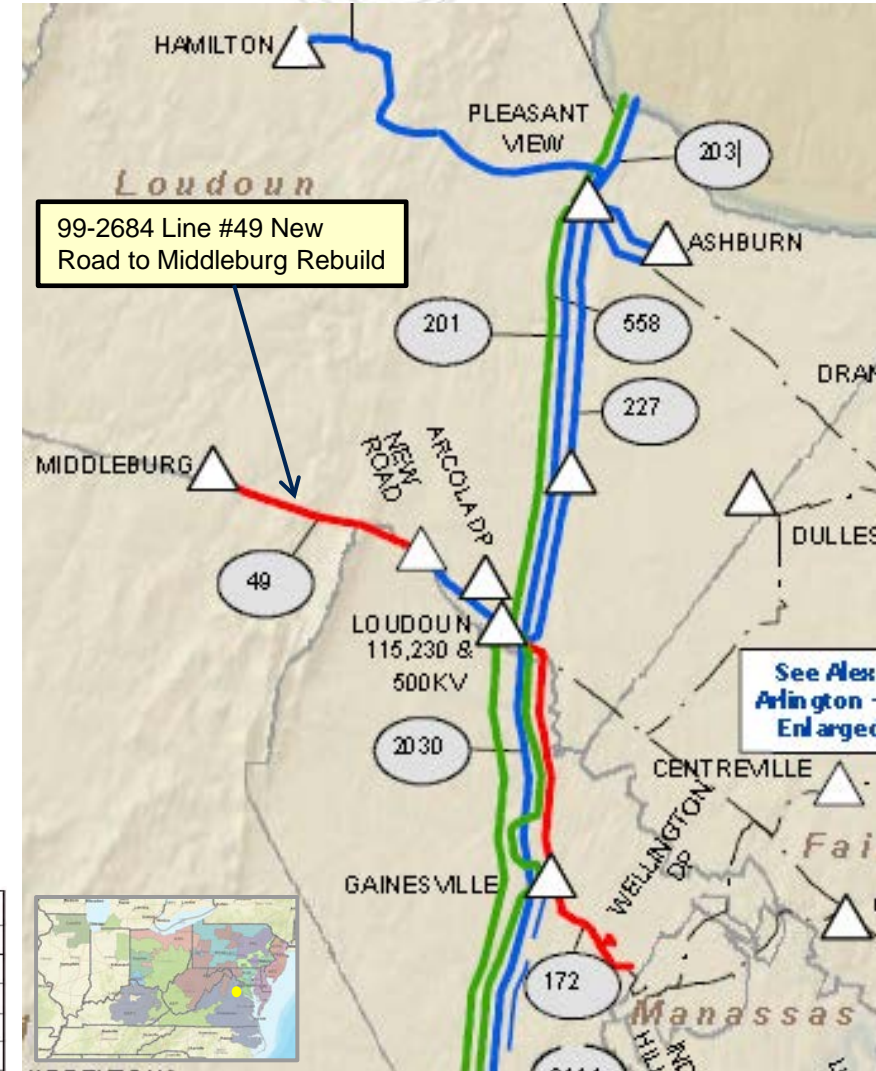
Recommended Solution:

- Rebuild Line #49 between New Road and Middleburg substations with single circuit steel structures to current 115kV standards with a minimum summer emergency rating of 261 MVA. (b3018)

Estimated Project Cost: \$13.8 M

Projected In-service Date: 12/31/2021

Project Status: Conceptual





Skimmer Substation Reliability Project – 115kV Lines #30 and #141

Previously Presented: 05/30/2018 SRRTPEP

Problem Statement:

- The breakers for 115kV Lines #30 and #141 at Skimmer Substation are of a type that has had operating issues and need to be replaced. Updated relaying will need to accompany this along with a new control house. Station service is currently supplied via distribution from AEP and a transmission primary source is being sought.

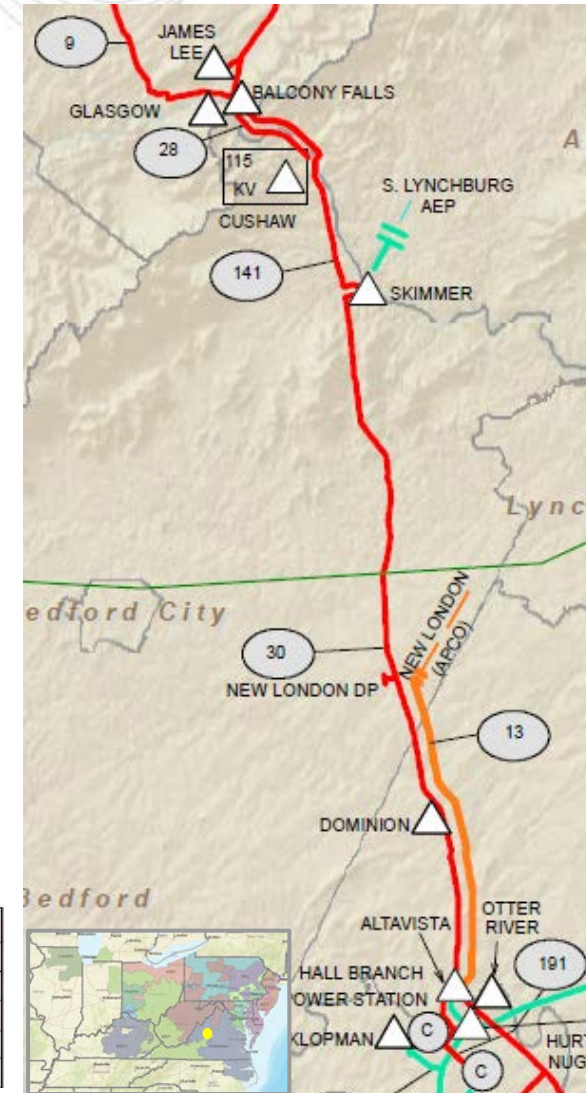
Selected Solution:

- Replace existing breakers for Lines #30 and #141 along with related breaker switches and wave traps. Construct a new control house and install a PVT for primary station service with a transfer switch for a distribution backup. (s1676)

Estimated Project Cost: \$2.54 M

Projected In-service Date: 11/15/2018

Project Status: Engineering



COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED

Dominion: Supplemental Project Herbert – New 115kV Dominion Energy Substation

Previously Presented: 05/30/2018 SR RTEP

Problem Statement:

- A large customer is building facilities north of Boydton Plank Road substation in Mecklenburg County, VA. The minimum demand for this customer is 59 MW at full buildout in 2022.

Selected Solution:

- Build a new substation called Herbert with a 115kV four breaker ring bus and two distribution transformers
- Split Line #171 (Chase City to Boydton Plank Rd) into two lines and terminate both lines into the new Herbert substation (**s1677**)

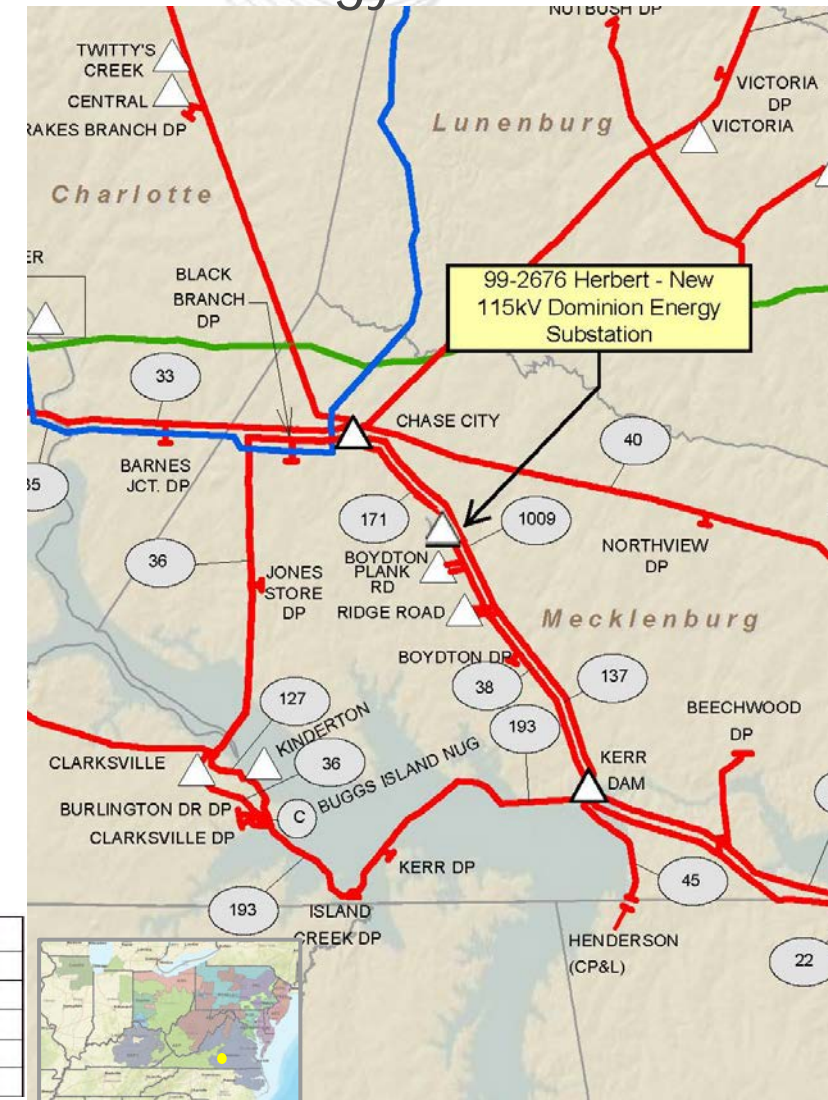
Revised Estimated Project Cost: \$4.7 M

Normal Service cost: \$1.4 M

Excess Facilities cost: \$3.3 M

Projected In-service Date: 10/1/2019

Project Status: Engineering



COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED

Dominion: Supplemental Project Pamplin 115kV Circuit Switcher and High Side Switch

Previously Presented: 05/30/2018 SRRTEP

Problem Statement:

- Dominion Distribution needs to upgrade transformer #2 34.5-23kV due to winter load exceeding the transformer normal overload (NOL) rating. The NOL rating was exceeded January 2018 and additional load growth of 1.9 MVA will be added in 2019.
- The existing 34.5-23kV three single phase transformers (and a spare) in the substation is not standard within the DE system and DE's mobile transformers are 115-23kV, not 34.5-23kV.
- There is no available high side fuse protection for a transformer bank greater than 6 MVA and there is no room for other protective devices in the substation with this three single phase bank arrangement (with a spare).
- Removal of the single phase banks allows for removal of wooden poles in the substation which is a DE policy due to the risk of wooden poles catching on fire,
- The proposed three phase 115-23kV transformer will be located in the same location in the substation as the existing transformer #2 bank which provides space for a high side circuit switcher and switch.

Selected Solution:

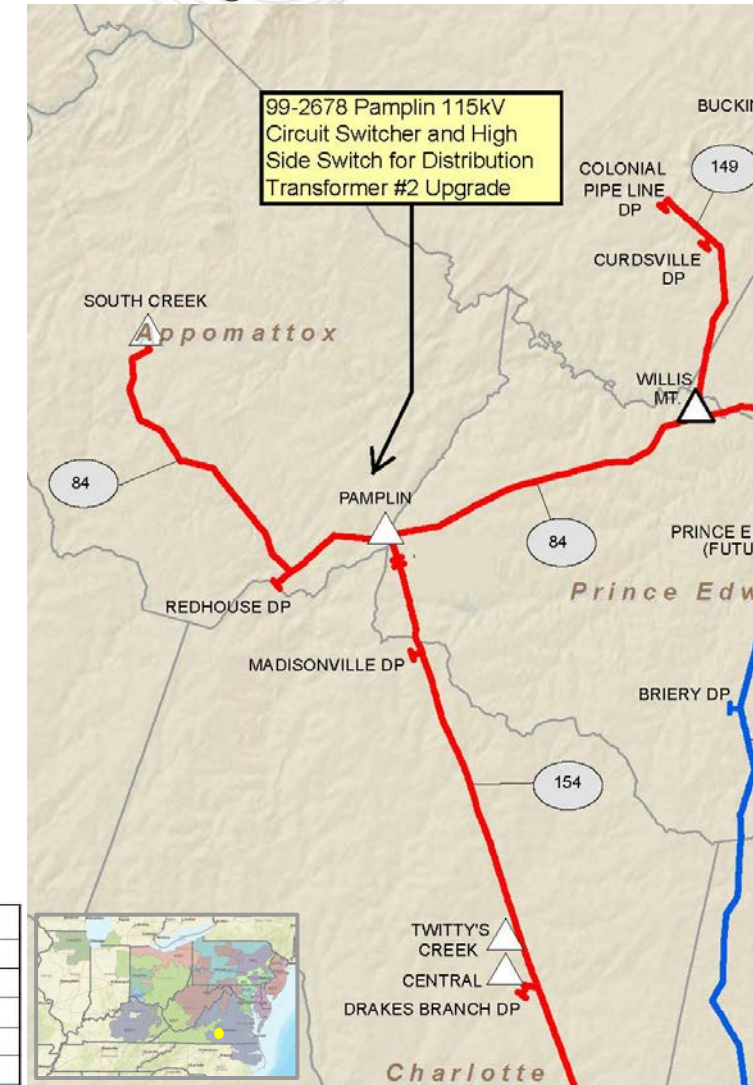
- Support the installation of the distribution transformer upgrade by installing a 115kV circuit switcher and high side switch. (s1678)

Estimated Project Cost: \$500 K

Projected In-service Date: 5/15/2019

Project Status: Conceptual

COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED



Next Steps



Upcoming SRRTEP-South Meetings

South	Start	End
8/20/2018	8:00	12:00
9/28/2018	8:30	11:30
10/29/2018	8:00	12:00
11/29/2018	8:30	11:30
12/05/2018	8:00	12:00



- PJM will retire the RTEP@pjm.com email address as of September 1, 2018. Stakeholders with questions about planning updates or planning windows should use the [Planning Community](#).
- PJM is enhancing the way we communicate to follow industry standards and maintain its standing as an industry leader.
- The [Planning Community](#) is a vital avenue for PJM members and staff to collaborate on planning updates, including RTEP windows, and get their questions answered.



Revision History

07/20/2018 – V1 – Original version posted to PJM.com